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Newsline

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New president appointed

Dr. Clement W. Bowman, 57, has been appointed President of the Alberta Research Council, effective August 30. Dr. Bowman is currently Vice-President, Research for Esso Petroleum Canada, with responsibility for the Esso Research Centre in Sarnia, Ontario.

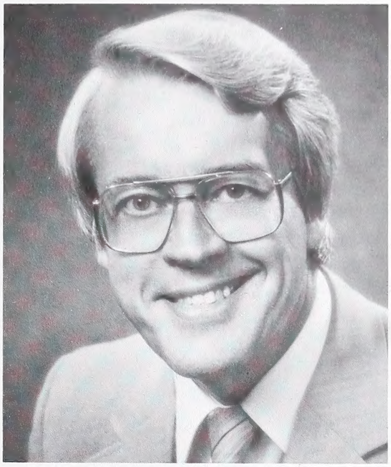
The appointment was announced December 12 by Fred Bradley, Chairman of the Research Council's Board of Directors, and Les Young, Minister of Technology, Research and Telecommunications.

"We are indeed fortunate to have attracted someone with Clem Bowman's outstanding qualifications, first-hand knowledge and commitment to Alberta to head Canada's oldest provincial research institute," said Mr. Young.

Dr. Bowman, who has served on the Research Council's Board of Directors since 1978, has had a distinguished association with Alberta's research and development activities. He was founding chairman and chief executive officer of Alberta Oil Sands Technology and Research Authority, serving in that position from 1975 until 1984.

Born in Toronto, Dr. Bowman is a graduate of the University of Toronto, and holds a Ph.D. in chemical engineering. He began his career with C.I.L./Dupont of Canada, where he participated in the design and plant-start of the first Canadian commercial nylon tire-yarn project. From 1962 to 1969, he was research manager for Syncrude Canada Limited, with prime responsibility for setting up and operating a research laboratory in Edmonton before joining Imperial Oil Enterprises.

He has maintained a strong interest in industry/university/government co-operation and these collaborations have resulted in papers and articles published in scientific and technical journals. He holds nine patents and has authored 23 publications on various hydrocarbon and energy technologies.



Dr. Clem Bowman

Dr. Bowman is a member of the Council of the National Research Council, the Federal Government Advisory Committee on Hydrogen Opportunities, the Board of Directors of the Institute for Chemical Science and Technology, and has served in numerous capacities, including president, of the Canadian Society of Chemical Engineering and the Chemical Institute of Canada. From 1982 to 1984 he served as a member and acting chairman on the Research and Science Advisory Committee, Government of Alberta.

Research Council still strong despite restraints

The Research Council is still a strong organization and will remain so despite the impact of the government's restraint program. That was the message conveyed to staff by Dr. Robert Green, Vice-President of Operations, at the annual staff meeting last month.

"After changes (in grant revenues) are brought about, the Research Council will still have funding at 90 per cent of the current year," Dr. Green said. "We have the specific support of the Premier and the strong support of the Department of Technology, Research and Telecommunications, whose minister sees a strong need and role for the Research Council. The government has made an excellent selection of the new president, Dr. Clem Bowman, who is an intelligent, capable and effective individual."

In talking to senior officials in government departments from which the Research Council gets a number of its contracts, Dr. Green has received a mixed response. Some departments have indicated there will be very little change, some have said they expect a 10 per cent reduction and from others

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Technical seminar January 20

Dr. Marianne English, group research manager, Atmospheric Sciences Department, will present the next technical seminar, January 20 at 11 a.m. in the auditorium. Her topic will be Weather Modification Research—A Review of the Work in Alberta. All staff are encouraged to attend this seminar series, designed to increase awareness and appreciation of our research projects.

Newsline is a monthly publication for the employees of the Alberta Research Council.

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and direct all questions to
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there is likely to be no support at all, he said.

The government grant allocation for 1987-88 has been set at $20.5 million, down 10 per cent from the current year and the question for senior management and the Board of Directors will be how to apply these reductions. "To arbitrarily say everything is 10 per cent less is a rather mindless way of approaching the reduction in funding and activity," says Dr. Green.

"What senior management will recommend to the Board of Directors is that the reduction in the grant be accommodated against some research programs, but not all of the programs. We want to make decisions regarding relative priority of our programs."

Dr. Green also pointed out that the Research Council must be careful in its decisions involving joint relationships with client departments. Any reductions must be in accord with the client departments and "we want a little breathing space to talk to these clients."

Senior management must present its proposed program funding changes to the Board of Directors and a special meeting of the directors will be called in early January. Until the Board has reached a conclusion, no announcement of changes will be made to staff.

"I am aware of your sense of apprehension. The indications are that the standard of living in government departments is dropping and we are going to have to deal with a period of restraint. But I have to feel we are still in a strong position—the Research Council is an important part of the provincial scheme for economic advantage," Dr. Green said, and he told staff to "keep your spirits up with that in mind."

RRSP information for investors

Registered Retirement Savings Plans (RRSPs) are individual long-term savings plans designed to supplement retirement income. RRSPs fall into two categories: a savings plan, registered with a financial institution (banks, insurance and trust companies) which earn interest, or self-administered plans, which offer a variety of investment choices including stocks, bonds and mortgages. Spousal RRSPs also are available in these categories.

If yor are considering contributions to an RRSP, you should be aware of current limits and investment rules applicable to 1986 and 1987. Much attention has been focused on increased contribution limits to $7500 starting in 1986. This change does not apply to Research Council employees participating in the Public Service or Management pension plans.

Research Council employees contributing to the employment pension plans may contribute $3500 **minus** the employee share of pension plan contributions (provided the employee has earned at least $17,500 this year). Employees with lesser earnings may contribute up to 20 per cent of their earnings minus pension plan contributions.

An employee cannot contribute to an RRSP if he or she is buying back previous pension service and claiming a tax deduction for the buy back. RRSP contributions for 1986 income tax claim purposes may be made until the end of February 1987.

Contributions to a spousal RRSP are based on the employee's salary and are subject to the same overall limits. You cannot contribute to the maximum of your plan plus contribute to a spousal plan.

Withdrawals from an RRSP can be made at any time, subject to the limitations imposed by the investment, and are taxed at that time. Withdrawals from spousal RRSPs have different tax implications which the RRSP holder should investigate.

If you have questions regarding RRSP contributions in relation to your status as a Research Council employee, contact Maja Hoeing, Human Resources Department, 450-5138.

United Way generously supported

Research Council employees generously supported the United Way last year, increasing total contributions by 10 per cent over the previous year. Sixty-one per cent of staff contributed $25,463 to the campaign and chairperson Karen Beliveau extends her thanks to the volunteer team and to all those who responded to the fund drive.

Development

The fourth article in a five-pa
the economic development of

Biotechnology. It's an age-old practice turned state-of-the-art science that holds the promise of better health, better crops, new sources of energy and has the potential for a whole range of new products and services.

Long before the basis of heredity was understood, farmers bred plants and animals to enhance desirable traits. In a sense, they were the first genetic engineers. When scientists cracked the genetic code and learned how to rewrite the genetic programs of microbes, they acquired powerful tools for selective breeding. The development of new techniques, centered on recombinant DNA technology, cell fusion, plant and animal cell cloning techniques, and bioprocess engineering have opened the door to vast and exciting possibilities in biology, microbiology, engineering and related disciplines.

The Research Council has had a modest microbiology program for more than 20 years, but the first steps toward biotechnical research were taken in 1979. Today, with a fully functioning biotechnology pilot plant, the Biotechnology Department's main thrust is the development of commercial fermentation processes for traditional or genetically engineered organisms.

"Our objective is to foster development of a biotechnology industry in Alberta," says Dr. Don Gerson, Head of the Biotechnology Department.

It is an objective in keeping with the Research Council's overall mission to provide the infrastructure for the provincial government's commitment to diversify Alberta's economy. The $6 million pilot plant is "extremely rare and is attracting biotechnology companies to Alberta from around the world," according to Dr. Gerson.

"For a multi-purpose facility, there is nothing to equal it in North America," he says and this assessment has been echoed by others in the field. One visitor here to discuss a potential contract pronounced the facility "one of the best anywhere in the world."

A new 15,000-litre fermentor due to be installed next year will boost the fermentation capacity to 35,000 litres. The pilot plant and toll production facility will offer scale-up services and

f biotechnology industry is objective

eries describing the work of the Alberta Research Council and how it supports
province.

ll production to biotechnology com-
nies developing new fermentation
oducts. The contractual basis for
ese services is cost recovery in a com-
titive research environment.

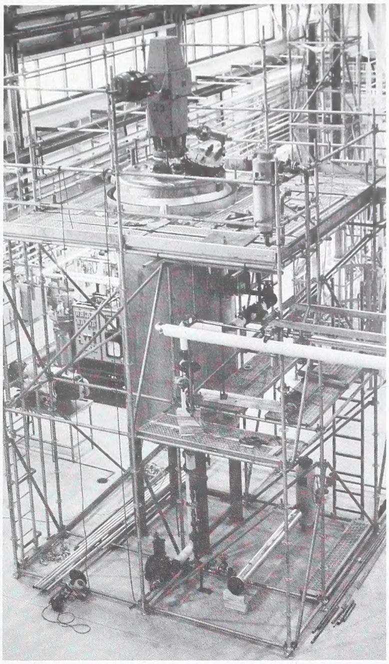
"Being able to discover minute quan-
ies of a potential product in a labora-
ry is only the initial step in product
velopment," says Dr. Gerson.
Making commercial quantities has its
n set of pitfalls and problems to be
lved. Our speciality is in solving those
oblems and developing a process ap-
cable at the production scale."

The Research Council has already
en two such efforts to successful com-
etion. The fermentation equipment
s barely installed when Advanced
netic Sciences Inc., Berkeley, Cali-
rnia, through its Canadian subsidi-
y, BIO-FROST Inc., turned to the
search Council for scale-up of its
ificial snow enhancer, expected to be
oon to North America's ski and tour-
n industries.

Anthocyanin, the red pigment abun-
nt in a particular variety of carrots,
n be extracted and transformed into a
tural coloring agent for use in confec-
naries and other foods. Dr. P.
garajan and Dr. Alan Jones have
ccessfully developed the process for
owing the carrot cells and the purifi-
ion process for the dye. The much
proved fermentation process is now
ng considered for a patent.

The Biotechnology Department's ef-
t toward supporting the economy of
province extends to one of the pro-
ce's fundamental resources—agri-
ture. Alberta farmers face a host of
er-present problems related to
ather, soil conditions, disease and
ring production costs. A major
apon in overcoming these problems
etter plants and with new techniques
selective breeding, plant scientists
ve a whole arsenal for developing
v varieties in far less time than it
es for traditional plant breeding.

lfalfa is a major forage crop, worth
0 million annually to Alberta's agri-
tural industry, and Research Council
ntists have been attacking problems
ociated with crop production in
erta. Working in close collabora-
n with scientists from Agriculture
Canada at Beaverlodge and the University of Alberta, Dr. Nagarajan is using tissue culture techniques in an attempt to develop better alfalfa cultivars. Their primary aim is to shorten the conventional plant breeding process by developing superior alfalfa plants with respect to winter hardiness, forage yield and quality for the Alberta environment.



A new 7,500-litre fermentor in the Biotechnology Pilot Plant.

Among the factors that contribute to increased crop yields, the availability of fixed nitrogen in the soil is of prime importance. For nitrogen fixation to occur in alfalfa, the proper soil bacterium (Rhizobium) which delivers nitrogen supplies to the plant roots, must be present.

Commercial Rhizobium innoculants that can be applied to the seed at the time of sowing or preinnoculated alfalfa seed are available to farmers, but most of the innoculants sold in Canada are imported from the United States and are not always useful in our soils and climate.

The goal is development of an innoculant industry in Canada and to this end, superior cultures of Rhizobium are being studied to determine the best scale-up procedures in the Research Council's fermentation pilot plant. Once innoculants are available in bulk, they will be field tested at the Beaverlodge station.

"Technology developed by the Research Council could then be transferred to the private sector for commercialization," says Dr. Walter Leps, who is heading the project.

The infrastructure in the Biotechnology Department and opportunities for leading-edge work are attracting researchers from around the world. Under an exchange agreement supported by Alberta Technology, Research and Telecommunications, the Research Council has several Chinese researchers here to do research and learn fermentation techniques.

The Research Council, in turn, is making a contribution to China's biotechnological effort, with the donation of some laboratory equipment and instruction in fermentation procedures. Dr. Gerson, Dr. Alan Jones and Dr. Manoj Kole presented a series of lectures at the Provincial Biotechnology Research and Development Centre, Wuhan, last summer and Dr. Kole scored a triumph during a six-week period at Harbin when he was able to increase productivity two-and-one-half fold in the making of a meat-flavoring agent. The increase is far beyond the minimum productivity level required for commercial processing and the Research Council is hoping to assist the Chinese bring the product to commercialization.

For all the spectacular successes in biotechnology during the past decade, biotechnologists emphasize that the science is still in a slow, long-term developmental stage. They caution against overnight commercial success, unrealistic goals, expectations and time frames. But biotechnology will reshape our world and the future benefits are incalculable. Dr. Gerson likens biotechnology to the electronics of 30 years ago—"in the 1950s no one foresaw the microchip. We don't know where biotechnology will be in 30 years."

Scientists demonstrate GIS applications

Geographic Information Systems (GIS), a new wave of specialized automated tools for managing map type data, are just beginning to make themselves felt in Alberta and soil scientists at the Research Council are helping pave the way for their acceptance.

"We're importing the knowledge about GIS into Alberta as fast as possible and through pilot projects demonstrating the applications of the technology," says Dr. Bob Fessenden, Head of the Terrain Sciences Department.

Speed, accuracy, expanded capabilities and custom-tailored output are some of the attractions of Geographic Information Systems.

As an example, one can overlay soil maps and land owner maps to rapidly calculate the amount of each soil type by land ownership unit.

MacMillan's group has recently completed a pilot project with Alberta Agriculture which demonstrated for the department how GIS technology could be used to assist in the irrigation planning in southern Alberta. That demonstration provides the department with a basis for automating management of existing irrigation lands and for planning future irrigation canals.

Thematic (non-locational) data describes such actual characteristics or variables as land use and title, or the condition of soils. The user can cross-reference spatial and thematic information as desired, which gives a GIS a considerable advantage over the more static mapmaking systems. The ability of a GIS to generate thematic maps, statistical and summary reports enhances the user's decision-making capabilities.

Bob MacMillan, Terrain Sciences Department, and Leon Marciak, Land Use Branch, Alberta Agriculture, work with output from Geographic Information Systems.

"The aspect of a GIS that generates excitement is the ability to interrelate various types of spatially (locational) distributed data for analysis," says Bob MacMillan of Terrain Sciences, who is managing the pilot projects. "The locational identifiers attached to data forming computer maps makes GIS unique—the maps can be analyzed by a variety of techniques to yield information useful in resource and cartographic-related concerns."

The Research Council group is building prototypes to demonstrate the value of such a GIS in land use planning for the County of Strathcona and has client requests for other GIS projects.

"These pilot projects are illustrations of technology transfer," says Dr. Fessenden. "The Research Council is providing a venue for other governments to see the possibilities in automated data analysis."

Staff notes

The Edmonton Food Bank was the winner in a Terrace Plaza competition last month. Sixth floor staff overtook the seventh floor staff after issuing a challenge to make contributions to the Food Bank. But everyone is to be congratulated—in three days they donated $600 in cash and another 600 pounds of food for the Food Bank.

* * *

Technologist John Pawlowicz, Terrain Sciences Department, was a guest lecturer at the Northern Alberta Institute of Technology, when he described his work at the Research Council for more than 75 students in the NAIT earth sciences program. John is a member of the research team for the highwall stability project.

Employee changes

We welcome to the Research Council: **Victoria Abat**, Clerk Typist, Records Management; **Jacqueline Charette**, Clerk Typist, Atmospheric Sciences; **Holly Dale**, Clerk Typist, Industrial Development; **Marc Dubord**, Junior Research Officer, Geological Survey; **Loretta Fudge**, Clerk Typist, Terrain Sciences; **Kelly Girhiny**, Clerk Typist, Oil Sands Research; **Theresa Kostek**, Administrative Professional Officer, Financial Services; **Valerie Kress**, Senior Secretary, Biotechnology; **Cyndee Lariviere**, Clerk Typist, Atmospheric Sciences; **John Newton**, Electronics Test Centre; **Helen Randolf**, Clerk Typist, Human Resources; **Margaret Sobchyshyn**, Clerk Typist, Geological Survey; **Rudolph Strobl**, Assistant Research Officer, Geological Survey; **Peter Taylor**, Research Technologist, Industrial Technologies; **Rosa Tsen**, Clerk Typist, Oil Sands Research; **James Underschultz**, Junior Research Officer, Geological Survey; **Robert Wohl**, Manager, Electronic Industry Information Centre, Calgary.

We say goodbye to: **Kelly Bentley, Anne Beatson, Tony Chen, Walter Chernecki, Robert Denholm, Reinhard Drobig, Linda Eizenporth, Mitch Harbora, Robert Irving, Dana King, Brian Lake, Charlotte Mougeot, Peter Roaf, Kim Sway, Lavorka Swenson, Rose-Anne Van Engelen, Stephanie Wilson, Dan Wernicke.**

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